IN THE DRAWINGS:

The attached sheets of drawings include changes to FIGs. 1-4. These sheets replace the original drawing sheets that included FIGs. 1-4.

REMARKS

The specification and drawings have been amended following translation of the application from German to English. Claims 1-17 have been amended. Claims 18-22 have been added. Claims 1-22 remain for consideration. No new matter has been added.

The objections and rejections shall be taken up in the order presented in the Official Action.

1. Claim 17 currently stands objected to for informalities.

Claim 17 has been amended to depend from claim 16.

2. Claim 15 currently stands rejected for allegedly failing to point out and distinctly claim the subject matter deemed to be the present invention.

Claim 15 has been amended.

3-4. Claims 1, 2 and 4-10 currently stand rejected for allegedly being obvious in view of the combined subject matter disclosed in U.S. Patent 6,469,785 to Duveneck et al. (hereinafter "Duveneck") and U.S. Patent 4,621,059 to Rokugawa (hereinafter "Rokugawa").

Claim 1

As amended claim 1 recites a device for detecting a cellular metabolic process associated with a cell by detecting a luminescence event in, at, or in the immediate vicinity of the cell. The device includes:

> "an excitation source connected to the inlet and accepting a biological or chemical excitation medium that includes a luminophore, where the excitation medium influences the metabolism of the cell during excitation thereof by the medium, and where the luminophore reacts with a metabolic product of the cell during the excitation thereof to thereby provide the luminescence signal." (cl. 1).

The Official Action contends that Duveneck discloses "*an excitation source containing chemical/biological excitation medium (liquid containing luminpohore or luminescence substance to be detected) which flows through the inlet opening (64) (see Duveneck fig. 1 and 8, col. 5 lines 13 – 27, 53 – 58, line 65 – col 6, line 14, col. 6 lines 48 – lines 67; col. 7 lines 5 – 12, col. 8 lines 26 – 38, col. 17 lines 59 – 67, col. 19 lines 25 – 59, col. 21 lines 10-14, lines 42 – 56 and col. 22 lines 15 – 20).*" (Official Action, pgs. 3-4). However, it is respectfully submitted that this contention is technically incorrect. Although prior art references must be considered as a whole for all it fairly discloses to the skilled person, in the interest of completeness each of the specific locations within Duveneck alleged in the Official Action to disclose this claimed feature shall be taken up in the order identified in the Official Action presented.

COLUMN 5, LINES 13-27

This cited section of Duveneck discloses a stacked, multiple substrate structure of modular construction that enables the replacement of the measuring cell when the recognition substance immobilized on the sensor layers of the measuring cells has been consumed by a measuring process. Duveneck defines the recognition substance or elements immobilized in or on the sensor layer as a specific affinity partner of the relevant analyte to be detected, where the analyte is contained within the sample provided to the optical detection device. (Col. 1, lines 27-28, lines 44-50). This disclosure from Duveneck fails to support the contention in Official Action noted above regarding "*an excitation source containing chemical/biological excitation medium (liquid containing luminphohore or luminescence substance to be detected) which flows through the inlet opening (64)*" as this fails to disclose or suggest any type of chemical or biological excitation medium, let alone one comprising a liquid containing a luminophore or luminescence substance to be detected.

COLUMN 5, LINES 53-58

This cited section of Duveneck discloses "*a sensor platform of this kind ... makes possible a parallel evanescent excitation and detection of the luminescence of identical or different analytes.*" The "parallel evanescent excitation" does not relate to any type of biological or chemical excitation medium, but instead relates to the use of a semiconductor laser to produce an evanescent field that can excite a sample to emit fluorescence. (Col. 1 line 60 to col. 2, line 7).

COLUMN 5, LINE 65 TO COLUMN 6, LINE 14

This cited section of Duveneck discloses that a sensor platform embodiment can analyze a sample solution for several analytes simultaneously. Duveneck teaches that the sensor platform comprises at least two waveguides constructed on a common carrier and ideally suited for use with a semiconductor laser and photodetector. This is for use with the parallel evanescent excitation and detection of the luminescence of the analytes. (Col. 5, lines 51-59). Again, this disclosure in Duveneck neither discloses nor suggests to any type of biological or chemical excitation medium. Duveneck simply discloses the use of a semiconductor laser to provide optical excitation of the luminescent radiation.

COLUMN 6, LINES 48-67

This cited section of Duveneck refers to FIG. 1 and discloses the structure of detection device illustrated in FIG. 1. There is no teaching or suggestion in this cited section regarding any type of biological or chemical excitation medium, that includes a luminophore. Thus, this cited section from Duveneck also fails to teach the features of amended claim 1 emphasized above.

COLUMN 7, LINES 5-12

This cited section of Duveneck discloses that the measuring chamber of FIG. 1 includes an inlet channel 64 and an outlet channel "*through which the fluid samples to be examined can be circulated through the measuring chamber 68 and past the sensor layer 8. The sensor layer 8 may be provided with recognition elements immobilized on the sensor layer which interact with a specific analyte to be detected in the sample, for example by binding to the analyte.*" (emphasis added). Nothing in this cited section of Duveneck discloses or suggests the claimed feature of:

> "an excitation source connected to the inlet and accepting a biological or chemical excitation medium that includes a luminophore, where the excitation medium influences the metabolism of the cell during excitation thereof by the medium, and where the luminophore reacts with a metabolic product of the cell during the excitation thereof to thereby provide the luminescence signal." (cl. 1)

Significantly, this cited section of Duveneck merely discloses that the sample is received through the inlet; in contrast in claim 1 the cell/sample is located on a surface of the carrier element and the inlet receives a biological or chemical excitation medium. Hence, this cited

section of Duveneck is clearly incapable of supporting the contention in the Official Action regarding the claimed excitation source.

COLUMN 8, LINES 26-38

This cited section of Duveneck discloses that its detection device "*is also suitable for the selective, quantitative determination of luminescent constituents in optically opaque fluids*" and proceeds to lists various examples of this type of fluid as well as other types of solutions. However, this vague and general statement fails to disclose in any manner how the luminescent constituents are utilized, as in the present claimed invention (e.g., the claim feature of *"where the excitation medium influences the metabolism of the cell during excitation thereof by the medium, and where the luminophore reacts with a metabolic product of the cell during the excitation thereof to thereby provide the luminescence signal."*). The claimed invention utilizes a biological or chemical medium that includes a luminophore to carry out its objective of detecting a cellular metabolic process associated with a cell. The cited disclosure from Duveneck fails to teach the features of amended claim 1 emphasized above.

COLUMN 17, LINES 59-67

This cited section of Duveneck discloses that the recognition elements comprise binding partners that are immobilized on the sensor platform. The recognition elements form interaction regions with the various analytes. The recognition elements are discussed above in paragraph 5). Thus, the discussion there is equally applicable to this cited disclosure in Duveneck. This cited disclosure from Duveneck fails to teach the features of amended claim 1 where *"an excitation source connected to the inlet and accepting a biological or chemical excitation medium that includes a luminophore, where the excitation medium influences the metabolism of the cell during excitation thereof by the medium, and where the luminophore reacts with a metabolic product of the cell during the excitation thereof to thereby provide the luminescence signal."* (cl. 1)

COLUMN 19, LINES 25-59

This cited section of Duveneck discloses that the luminescent substances, which may comprise luminophores bound to a protein, may be immobilized on the surface of the waveguides. Further, "*if partners having affinity for the proteins are passed over that immobilized layer, the luminescence can be altered thereby and the quantity of the partners having affinity can thus be determined. In particular, it is also possible for both partners of an affinity complex to be labelled with luminophores in order, for example, to carry out determinations of concentration on the basis of the energy transfer between the two, for example in the form of luminescence extinction.*" This passage from Duveneck fails to disclose the feature alleged in the Official Action since it merely discloses luminescent substances that include a luminophore are immobilized on a surface of a waveguide. There is no teaching or suggestion of the excitation source as set forth in claim 1. That is Duveneck neither discloses nor suggests *"an excitation source .... the luminescence signal."* (cl. 1).

COLUMN 21, LINES 10-14

Duveneck discloses that "*by 'sample' there is to be understood within the context of the present invention the entire solution to be analyzed, which may comprise a substance to be detected--the analyte. The detection can be effected in a one-step or multiple-step assay during the course of which the surface of the sensor layer is brought into contact with one or more solutions. At least one of the solutions used comprises a luminescent substance which can be detected.*" This disclosure sets out a process for detecting an analyte within a sample solution which also contains a luminescent substance. However, this disclosure fails to teach or suggest the features of amended claim 1 where a biological or chemical excitation medium includes the luminophore, and specifically the claimed feature of "*an excitation source connected to the inlet and accepting a biological or chemical excitation medium that includes a luminophore, where the excitation medium influences the metabolism of the cell during excitation thereof by the medium, and where the luminophore reacts with a metabolic product of the cell during the excitation thereof to thereby provide the luminescence signal.*". (cl. 1).

COLUMN 21, LINES 42-56

This cited section of Duveneck merely discloses various specific types of luminescent dyes that may be used as luminescent compounds, including certain ones having particular wavelength ranges of luminescence. Again, this disclosure fails to teach or suggest the use of a biological or chemical excitation medium that includes a luminophore, along with the subsequent features recited in amended claim 1.

COLUMN 22, LINES 15-20

This cited section of Duveneck discloses that "*equally, quantitative determination of the analytes is possible by measuring the change in luminescence when the sample interacts with the luminophores, for example in the form of luminescence extinction by oxygen or luminescence enhancement resulting from conformation changes in proteins.*" This disclosure fails to teach or suggest the use of a biological or chemical excitation medium that includes the luminophore as recited in claim 1. Specifically, this disclosure fails to teach or suggest the claimed features of *"an excitation source connected to the inlet and accepting a biological or chemical excitation medium that includes a luminophore, where the excitation medium influences the metabolism of the cell during excitation thereof by the medium, and where the luminophore reacts with a metabolic product of the cell during the excitation thereof to thereby provide the luminescence signal."* (cl. 1). This cited section from Duveneck merely teaches that a quantitative determination of the analytes is possible by measuring the change in the luminescence when the sample interacts with the luminophores.

In summary, as set forth above and contrary to the contentions in the Official Action, Duveneck neither discloses nor suggests the features of:

> "an excitation source connected to the inlet and accepting a biological or chemical excitation medium that includes a luminophore, where the excitation medium influences the metabolism of the cell during excitation thereof by the medium, and where the luminophore reacts with a metabolic product of the cell during the excitation thereof to thereby provide the luminescence signal." (cl. 1)

THE COMBINED REFERENCES PROVIDE NO SUGGESTION OF THE CLAIMED EXCITATION SOURCE

Assuming for the moment without admitting that Duveneck and Rokugawa are even properly combinable, the resultant combination still fails to disclose the claimed feature of *"an excitation source connected to the inlet and accepting a biological or chemical excitation medium that includes a luminophore, where the excitation medium influences the metabolism of the cell during excitation thereof by the medium, and where the luminophore reacts with a metabolic product of the cell during the excitation thereof to thereby provide the luminescence signal."* (cl. 1). The Official Action contends that Duveneck discloses this feature, but as set forth in detail above this contention is based upon an overly broad and technically incorrect reading of Duveneck. Rokugawa clearly fails to disclosure this claimed feature. As result, even if Duveneck and Rokugawa are combined the resultant combination is incapable of rendering claim 1 obvious.

In Duveneck no biological cells are assayed and no stimulant for cells exists either. The measuring chamber 68 (FIG. 1) serves only for holding a sample to be assayed. Subject to the bond of an analyte contained in the sample to a sensor layer 8 a luminescent radiation is created. The luminescent radiation, however, is not excited chemically or biologically, but instead optically by excitation radiation 70 created by a semiconductor laser 10 and coupled into an optical waveguide. Optical excitation of the luminescent radiation occurs via the evanescent field of the waveguide 6 (see column 7, line 14), which exists only in close proximity to he surface of the waveguide 6, and cooperates with a sensor layer 8 arranged on the waveguide.

In Rokugawa a device for determination of the speed of a enzyme reaction is described. The device has a first vessel 2 with a luminescent substrate and a second vessel 12 with a sample containing an analyte to be detected. The luminescent substrate and the sample are mixed with each other and subsequently supplied to a capillary column 16 in which an enzyme is located. When the analyte, the luminescent substrate and the sample meet, a chemiluminescent radiation is created which is sent to a photo diode array via optical waveguides 20.

The device includes a vessel 2 for a luminescent substrate but a person skilled in the art would not combine such vessel with the device by Duveneck, because in the case of the latter device the luminescent radiation is optically excited and therefore a luminescent substrate is not necessary. Nor is an enzyme contained in the measuring chamber by Duveneck, that is with such device no chemiluminescent radiation would be created, even if the person skilled in the art would connect a vessel containing a luminescent substrate to the measuring chamber 68.

5. Claim 3 currently stands rejected for allegedly being obvious in view of the combined subject matter in Duveneck, Rokugawa and U.S. Patent 6,104,495 to Sieben et al. (hereinafter "Sieben").

It is respectfully submitted that this rejection is now moot since claim 3 depends from claim 1, which is patentable for at least the reasons set forth above.

In any event, Sieben is not prior art to the claimed invention since both were commonly owned at the time of the claimed invention set forth in the present application. Sieben is assigned of record to Micronas Intermettal GmbH. Micronas Intermettal GmbH

subsequently changed its company name to simply Micronas GmbH. The present application was assigned to Micronas GmbH at the time the present invention was filed. Therefore, since the current application and Sieben were owned by the same entity at the time of the present invention, Sieben is not prior art and as a result it is respectfully submitted that the obviousness rejection be withdrawn.

6. Claims 12 and 14 currently stand rejected for allegedly being obvious in view of the combined subject matter in Duveneck, Rokugawa and U.S. Published Application 2002/0182631 to Schurmann-Mader et al. (hereinafter "Schurmann-Mader").

It is respectfully submitted that the rejection of these claims is moot, since each of claims 12 and 14 depends directly or indirectly from amended claim 1, which is patentable for at least the reasons set forth above.

In addition, Schurmann-Mader is not prior art for the reasons discussed hereinafter with respect to the rejection of claim 16.

7. Claims 11 and 15 currently stand rejected for allegedly being obvious in view of the combined subject matter in Duveneck, Rokugawa and U.S. Patent 5,278,048 to Parce (hereinafter "Parce").

It is respectfully submitted that the rejection of these claims is moot, since each of claims 11 and 15 depends directly or indirectly from amended claim 1, which is patentable for at least the reasons set forth above.

8. Claim 13 currently stands rejected for allegedly being obvious in view of the combined subject matter in Duveneck, Rokugawa and Schurmann-Mader.

It is respectfully submitted that the rejection of this claim is moot, since claim 13 depends indirectly from amended claim 1, which is patentable for at least the reasons set forth above.

9. Claim 16 currently stands rejected for allegedly being obvious in view of the combined subject matter in Schurmann-Mader and U.S. Patent 4,385,113 to Chappelle et al. (hereinafter "Chappelle").

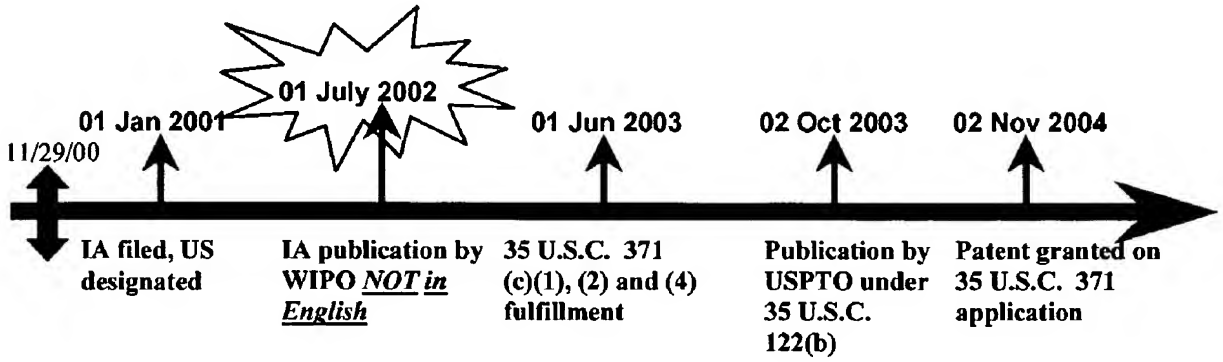
It is respectfully submitted that this rejection is improper as Schurmann-Mader does not qualify as either a 35 U.S.C. §102(a)/§103, 35 U.S.C. §102(b)/§103, or 35 U.S.C. §102(e)/§103 reference. As such, Schurmann-Mader cannot be properly combined with Chappelle to render claim 16 obvious. The present application claims priority to two patent applications filed with the European Patent Office ("EPO"): EPO Appl. No. 02006978.7, filed March 27, 2002; and EPO Appl. No. 02016793.8, filed July 26, 2002. Thus, the effective U.S. filing date for the current application is at least as early as July 26, 2002. The publication date of Schurmann-Mader is December 5, 2002. Thus, Schurmann-Mader does not qualify as either a 35 U.S.C. §102(a)/§103 or a 35 U.S.C. §102(b)/§103 reference. Regarding the status of Schurmann-Mader as a 35 U.S.C. §102(e)/§103 reference, Schurmann-Mader was filed as an international PCT application on December 13, 2000. Thus, the current version of 35 U.S.C. §102(e) that went into effect on November 29, 2000 applies. That version of 35 U.S.C. §102(e) states that an international PCT application such as Schurmann-Mader "*shall have the effects for the purposes of this subsection of an*

application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language". While the international PCT application version of Schurmann-Mader designated the United States, that version of Schurmann-Mader was not published in the English language but was instead published in the German language as document number WO 01/43875 A1. This document was cited in the "PCT International Preliminary Examination Report" dated April 2, 2004, an English language version of which was filed with the U.S. PTO on September 27, 2004, together with the instant application and other documents, including an Information Disclosure Statement which included the currently cited version of Schurmann-Mader, U.S> Published Patent Application 2002/0182631 A1.

As further guidance in this issue, MPEP §706.02(f)(1) provides examination guidelines for applying references under 35 U.S.C. §102(e). Example 5, which is reproduced below, is clearly on point and demonstrates how a reference such as Schurmann-Mader cannot qualify as prior art under 35 U.S.C. §102(e).

"*Example 5: References based on the national stage (35 U.S.C. 371) of an International Application filed on or after November 29, 2000 and which was not published in English under PCT Article 21(2). All references, whether the WIPO publication, the U.S. patent application publication or the U.S. patent, of an international application (IA) that was filed on or after November 29, 2000 but was not published in English under PCT Article 21(2) have no 35 U.S.C. 102 (e) prior art date at all. According to 35 U.S.C. 102 (e), no benefit of the international filing date (nor any U.S. filing dates prior to the IA) is given for 35 U.S.C. 102 (e) prior art purposes if the IA was published under PCT Article 21(2) in a language*

other than English, regardless of whether the international application entered the national stage. Such references may be applied under 35 U.S.C. 102 (a) or (b) as of their publication dates, but never under 35 U.S.C. 102 (e).



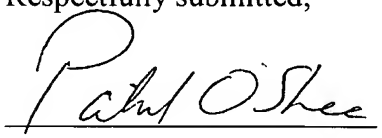
The 35 U.S.C. 102(e)(1) date for the IA Publication by WIPO is: None. The 35 U.S.C. 102(e)(1) date for the Publication by USPTO is: None. The 35 U.S.C. 102(e)(2) date for the Patent is: None. The IA publication by WIPO can be applied under 35 U.S.C. 102 (a) or (b) as of its publication date (01 July 2002)." Thus, Schurmann-Mader also fails to qualify as a 35 U.S.C. §102(e)/§103 reference.

In light of the foregoing, because Schurmann-Mader fails to qualify as prior art, it cannot be combined with Chappelle to render claim 16 obvious. As such, it is respectfully submitted that the obviousness rejection of claim 16 is now moot and should be removed, and that claim 16 is in condition for allowance.

For all the foregoing reasons, reconsideration and allowance of claims 1-22 is respectfully requested.

If a telephone interview could assist in the prosecution of this application, please call the undersigned attorney.

Respectfully submitted,



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REPLACEMENT DRAWING SHEET

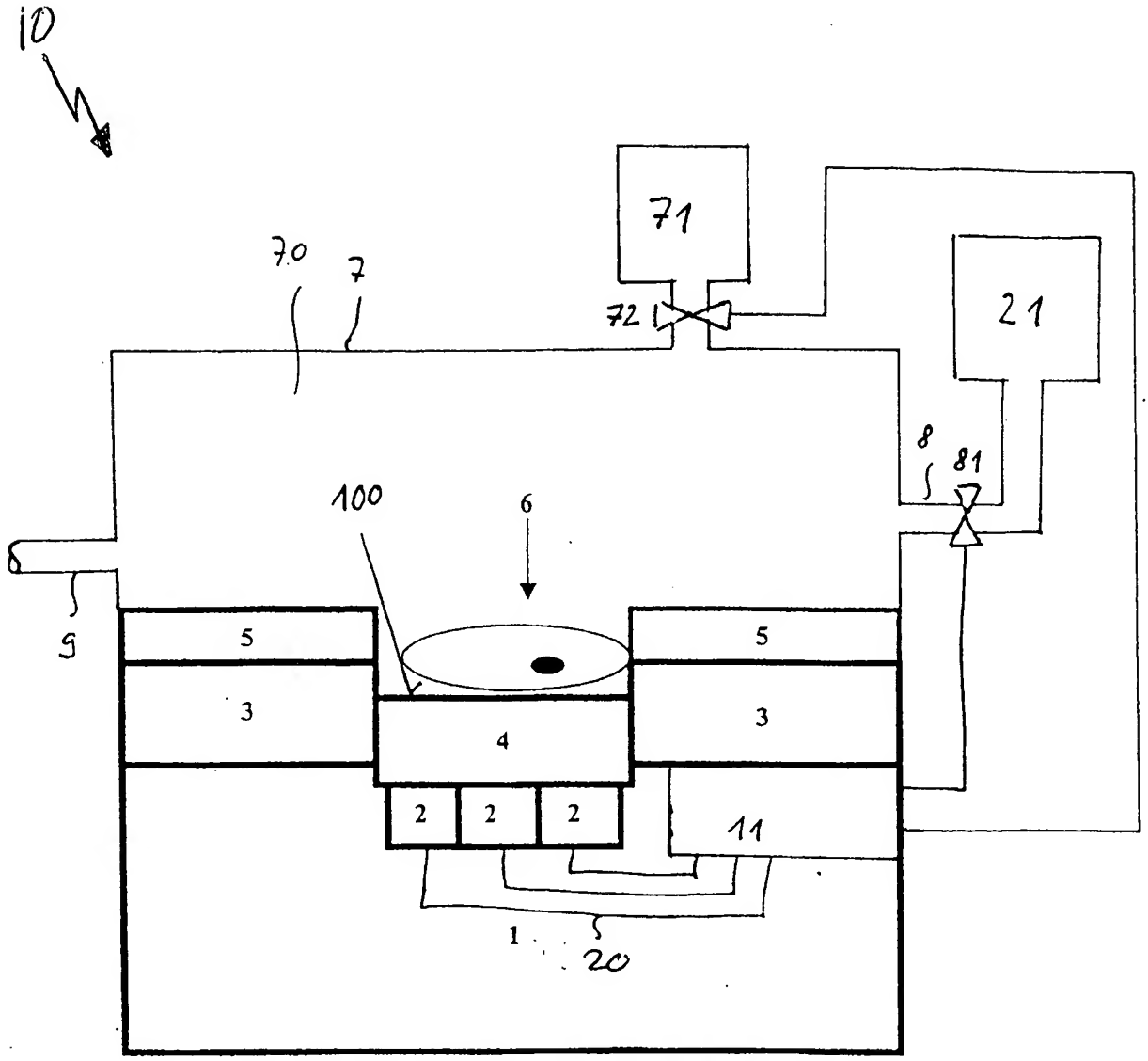

FIG. 1

REPLACEMENT DRAWING SHEET

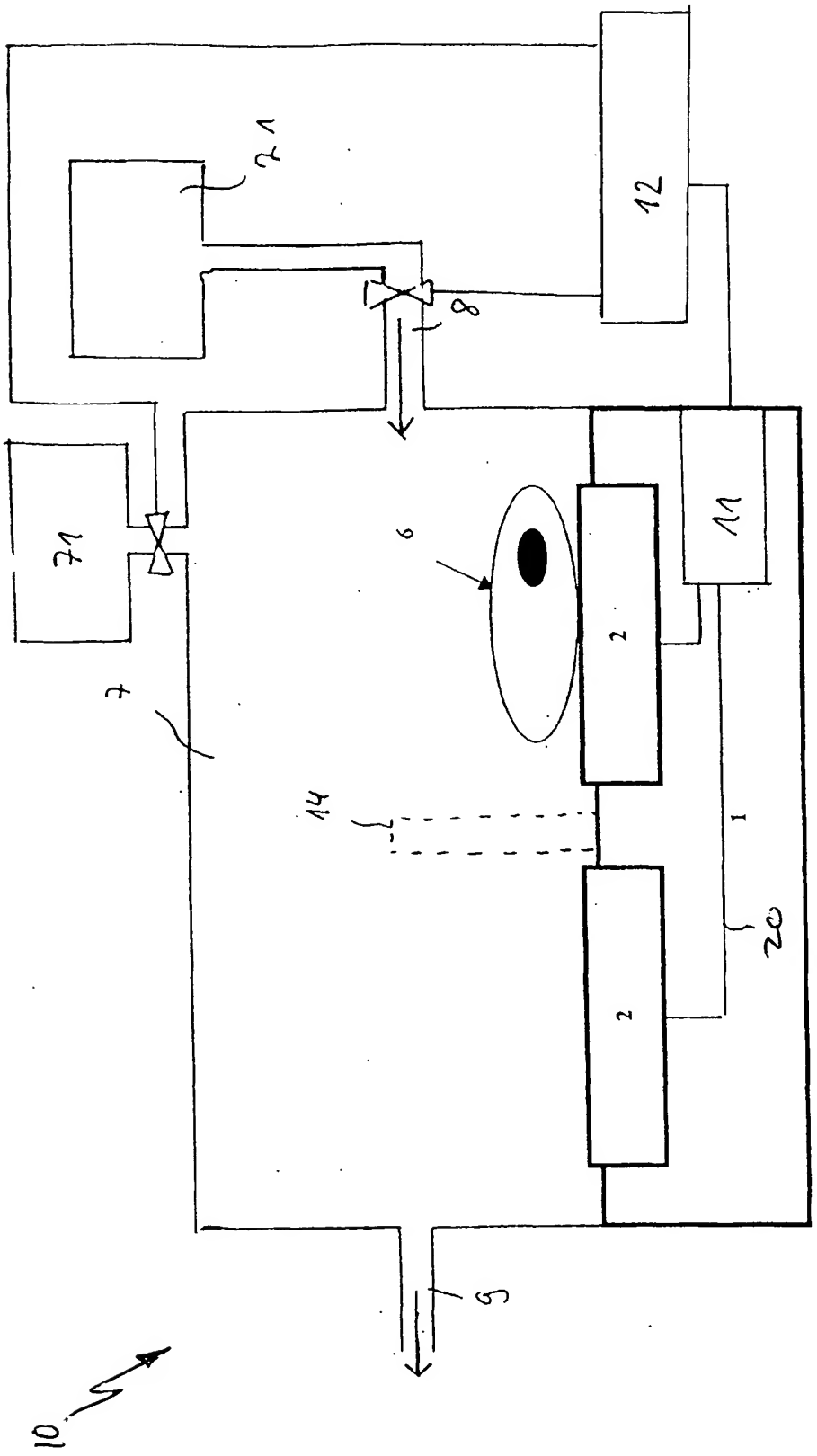

FIG. 2

REPLACEMENT DRAWING SHEET

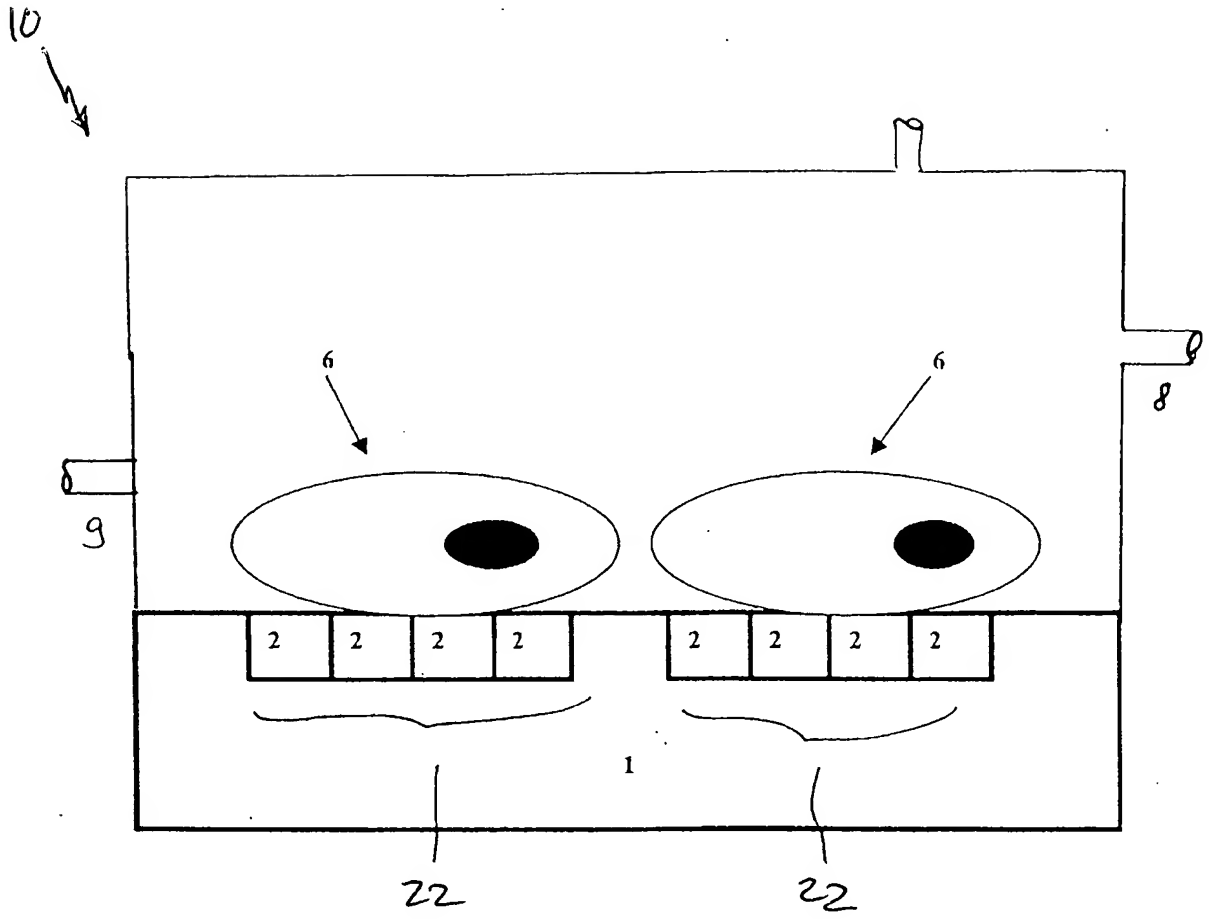

FIG. 3

REPLACEMENT DRAWING SHEET

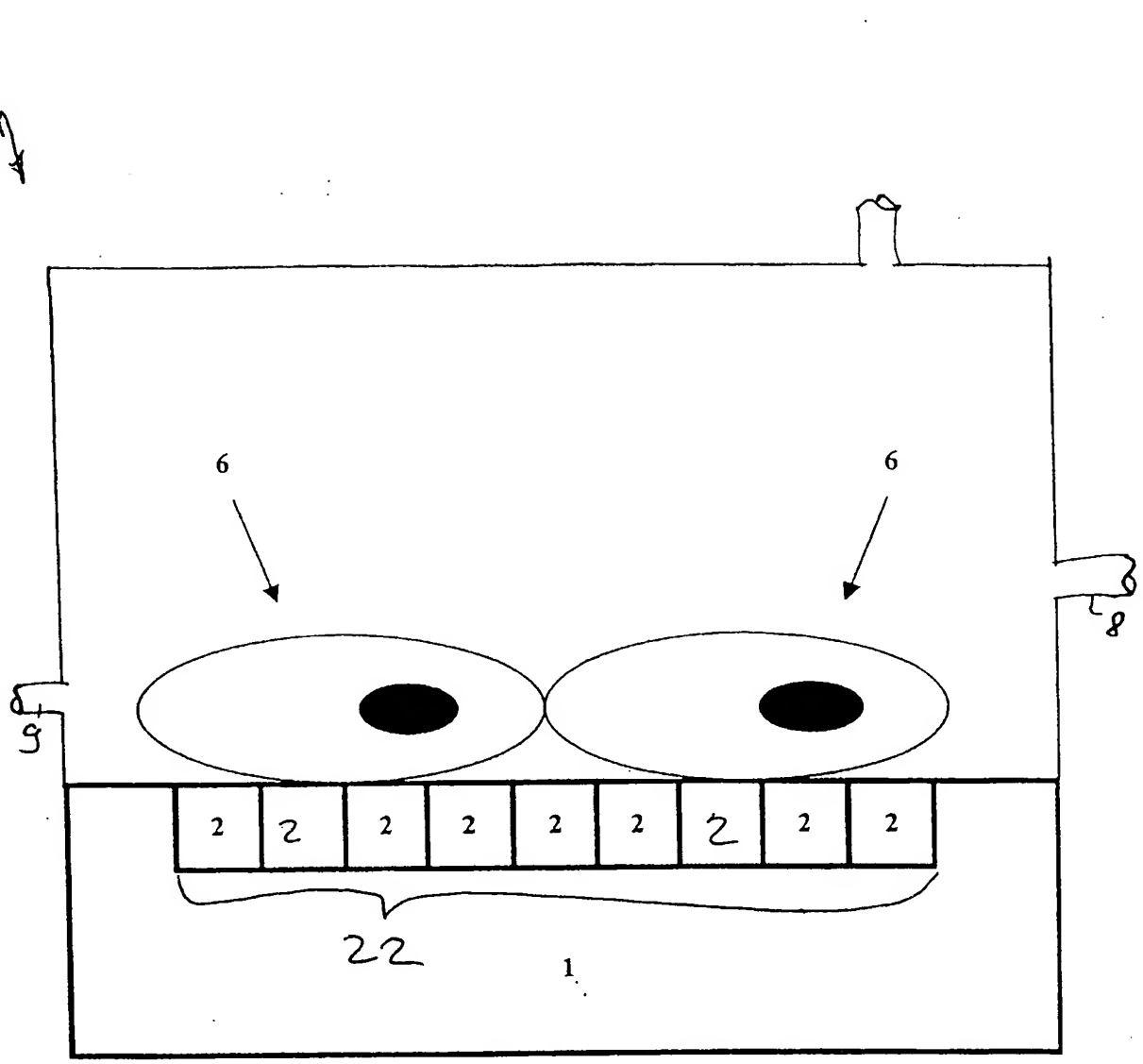

FIG. 4